

# PATENT ABSTRACTS OF JAPAN

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(71)Applicant : **NOK CORP**

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(72)Inventor : **YOSHIDA MINORU**

**HASHIMOTO NARIHIRO**

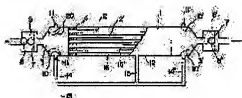
**TOMINAGA SEIICHI**

## (54) PUMPING MEMBRANE MODULE

### (57)Abstract:

**PURPOSE:** To increase the flow rate of a fluid without relying on the pressure change of hollow yarn membranes in a pumping membrane module for gas-liquid or liquid- liquid exchange using a non-rubbery elastic membrane material and a hollow yarn membrane group.

**CONSTITUTION:** A suction port 5 of a fluid to be treated and a discharge port 6 of a treated fluid both of which, have movement preventing parts 7 provided on the way thereof and having valve balls 8 sealed therein on the side opposite to a cylindrical body 1 or on the side of the cylindrical body 1 are provided to both end parts of the cylindrical body 1 in which a non-elastic hollow yarn membrane group 2 is received on the center side from the end parts of the cylindrical body in such a state that the terminal parts thereof are potted and an annular pumping vol. bag 10 made of rubber is fixed between at least one of the suction port 5 and the discharge port 6 and one of the potting parts 4 on the inner surface side of the cylindrical body 1. Then, the inlet and outlet of the treated fluid connected to a pumping device is branched to be connected to the bag 10 and the body part of the cylindrical body



between both potting parts 4 to constitute an internal reflux type pumping membrane module.  
An external reflux type pumping membrane module is constituted by deforming this module.